

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, AND 30</i>				1. REQUISITION NUMBER W68MD9-4202-7670		PAGE 1 OF 38					
2. CONTRACT NO. W912DW-04-P-0332		3. AWARD/EFFECTIVE DATE 05-Aug-2004		4. ORDER NUMBER		5. SOLICITATION NUMBER W912DW-04-Q-0138					
7. FOR SOLICITATION INFORMATION CALL:		a. NAME SUSAN M VALENZUELA			b. TELEPHONE NUMBER (No Collect Calls) 206-764-6691		6. SOLICITATION ISSUE DATE 29-Jul-2004				
9. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT 4735 EAST MARGINAL WAY SOUTH SEATTLE WA 98134-2329 TEL: 206-764-3772 FAX: 206-764-6817		CODE W912DW		10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED <input type="checkbox"/> SET ASIDE: % FOR <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> 8(A) NAICS: 541380 SIZE STANDARD:\$6.0 Million		11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE		12. DISCOUNT TERMS NET 30 DAYS			
						13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)					
						13b. RATING					
						14. METHOD OF SOLICITATION <input checked="" type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP					
15. DELIVER TO SEE SCHEDULE		CODE		16. ADMINISTERED BY USA ENGINEER DISTRICT, SEATTLE SUSAN VALENZUELA PH:206-764-6691 FAX: 206-764-6817 SUSAN.M.VALENZUELA@US.ARMY.MIL SEATTLE WA		CODE W912DW					
17a. CONTRACTOR/OFFEROR ANALYTICAL RESOURCES INC MARY LOU FOX 4611 S. 134TH PLACE TUKWILA WA 98163-3240 TEL. 206-695-6211		CODE 0F892		18a. PAYMENT WILL BE MADE BY US ARMY CORPS OF ENGRS FINANCE CENTER CEFC-AO-P 901-874-8556 5722 INTEGRITY DRIVE MILLINGTON TN 38054-5005		CODE W66KQZ					
		FACILITY CODE 0F892									
<input type="checkbox"/> 17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER		18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a. UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM									
19. ITEM NO.		20. SCHEDULE OF SUPPLIES/ SERVICES		21. QUANTITY		22. UNIT		23. UNIT PRICE		24. AMOUNT	
		SEE SCHEDULE									
25. ACCOUNTING AND APPROPRIATION DATA See Schedule						26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$10,893.00					
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1. 52.212-4. FAR 52.212-3. 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED <input checked="" type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input checked="" type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED											
28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES <input type="checkbox"/> TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.						29. AWARD OF CONTRACT: REFERENCE <input type="checkbox"/> OFFER DATED . YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:					
30a. SIGNATURE OF OFFEROR/CONTRACTOR				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)				31c. DATE SIGNED			
				<i>Elaine M Ebert</i>				09-Aug-2004			
30b. NAME AND TITLE OF SIGNER (TYPE OR PRINT)			30c. DATE SIGNED			31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT)					
						ELAINE M EBERT / CONTRACTING OFFICER TEL: (206) 764-3638 EMAIL: elaine.m.ebert@usace.army.mil					

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS (CONTINUED)					PAGE 2 OF 38	
19. ITEM NO.	20. SCHEDULE OF SUPPLIES/ SERVICES		21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	SEE SCHEDULE					
32a. QUANTITY IN COLUMN 21 HAS BEEN <input type="checkbox"/> RECEIVED <input type="checkbox"/> INSPECTED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____						
32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE			32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		
32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE				32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE		
				32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE		
33. SHIP NUMBER		34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		37. CHECK NUMBER
38. S/R ACCOUNT NUMBER		39. S/R VOUCHER NUMBER	40. PAID BY			
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT			42a. RECEIVED BY <i>(Print)</i>			
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER			41c. DATE		42b. RECEIVED AT <i>(Location)</i>	
					42c. DATE REC'D <i>(YY/MM/DD)</i>	
					42d. TOTAL CONTAINERS	

Section SF 1449 - CONTINUATION SHEET

NOTES:

COMPLETION DATE: 15 NOVEMBER 2004

Web Invoicing System (WInS)

WInS is an optional online invoicing system providing Department of Defense vendors an electronic means of submitting invoices for payment. Vendor registration for WinS is accomplished through the following DFAS website: <https://ecweb.dfas.mil> At the website click on NEW Account to register and select "USACE" as the payment system name. The payment office code and location is "TO-UFC Millington". To establish an account in WInS, vendors must be registered with the Central Contractor Registration (CCR).

All invoices are to be submitted in accordance with the instructions above, or mailed to:

US ARMY CORPS OF ENGRS FINANCE CENTER
CEFC-AO-P 901-874-8556
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

A copy of all invoices are to be mailed to:

US ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT
Attn: EC-TB-ET, Sandra Lemlich
P.O. Box 3755
Seattle, WA. 98124-3755

CF: CONTRACTOR: marylou@arilabs.com and sue@arilabs.com
CENWS-PM-EM, Rodney Taie
CENWS-PM-EM, Shawna Westhoff
CENWS-EC-TB-ET, Sandra Lemlich
FILE

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		1	Lump Sum	\$10,893.00	\$10,893.00 NTE
	CONFIRMATIONAL SAMPLING: ASTORIA AIRPORT FFP PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND SUPPLIES NECESSARY TO PERFORM THE LABORATORY SERVICES IN ACCORDANCE WITH THE SCOPE OF WORK AND PART II OF THE QUALITY ASSURANCE PROJECT PLAN AS INCORPORATED HEREIN. PARTIAL PAYMENTS AUTHORIZED IN ACCORDANCE WITH THE RATE SCHEDULE INCORPORATED HEREIN. PURCHASE REQUEST NUMBER: W68MD9-4202-7670				
				NET AMT	\$10,893.00
	ACRN AA Funded Amount				\$10,893.00

FOB: Destination

ACCOUNTING AND APPROPRIATION DATA

AA: 21420200000 088082 25GYJGBCD249300824000 ENVR 35026
COST 000000000000
CODE:
AMOUNT: \$10,893.00

RATE SCHEDULE

**Astoria Airport - F10OR056001 - Confirmational Sampling
Rate Schedule**

<u>ANALYTE</u>	<u>QTY/UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
8270 SIM in soil (PAH's)	6 EA	\$150.00	\$900.00
8270 SIM in water (PAH's)	17 EA	\$148.00	\$2,516.00
NWTPH-Dx in soil	6 EA	\$68.00	\$408.00
NWTPH-Dx in water	17 EA	\$65.00	\$1,105.00
NWTPH-Gx in soil	6 EA	\$54.00	\$324.00
NWTPH-Gx in water	19 EA	\$54.00	\$1,026.00
6020 (Lead) in soil	6 EA	\$24.00	\$144.00
6020 (Total Lead) in water	17 EA	\$24.00	\$408.00
6020 (Dissolved Lead) in water	17 EA	\$24.00	\$408.00
8260 SIM (BTEX, EDB, EDC MTBE) in soil	6 EA	\$140.00	\$840.00
8260 SIM (BTEX, EDB, EDC MTBE) in water	19 EA	\$128.00	\$2,432.00
160.2 TSS in water	14 EA	\$12.00	\$168.00
Subtotal			\$10,679.00
Raw Data Package	2% of Subtotal	\$214.00	
Grand Total			\$10,893.00

SCOPE OF WORK

**Astoria Airport
F10OR056001
Confirmational Sampling
Scope of Work For Laboratory Services**

This Scope Work (SOW) is for analytical laboratory services to support the confirmational sampling at the Astoria Airport in Astoria, Oregon. Field samplers from the USACE, Seattle District, will collect groundwater, surface water, and soil samples during the August sampling event.

Nineteen samples (thirteen groundwater, two surface water and 4 soil), two MS/MSD pairs (one soil and one groundwater pair) and two field blanks of water (to be analyzed for NWTPH-Gx and 8260 SIM BTEX, EDB, EDC, MTBE) shall be collected and shipped or delivered to the laboratory by USACE. The soil samples sent to the laboratory shall be analyzed for the analytes in Table 1 and the water samples shall be analyzed for the analytes in Table 2. The required quality control criteria are presented in Table 3. The reporting limits shall be no more than ½ the risk-based concentrations presented in Table 4. The laboratory is also required to follow requirements of the attached QAPP, the analytical method, and the USACE EM 200-1-3 Appendix I "The USACE Shell."

The laboratory shall provide a complete CLP-type raw data package that includes, but is not limited to, the case narrative, sample results, raw data system printouts (or legible copies), chromatograms, compiled QC data (i.e., initial and continuing calibration verification, mass calibration and mass and spectral tuning results, internal standard responses, laboratory responses, laboratory duplicate (MS/MSD) and LCS results, method blank), chain-of-custody forms, and cooler receipt forms within 30 days from sample receipt. All documentation necessary to perform a complete CLP-type data validation shall be provided in the data package.

Table 1 SOIL				
Method	Max. Number of Samples	MS-MSD samples	Container and Preservative	Holding Time (days)
8270 SIM PAHs	4	2 (1 pair)	8 oz. GWM 4+- 2°C	14 days to extraction, 40 days to analysis
NWTPH-Dx	4	2 (1 pair)	8 oz. GWM 4+- 2°C	14 days to extraction, 40 days to analysis
NWTPH-Gx	4	2 (1 pair)	4 oz. GWM 4+- 2°C	14 days
Pb 6020	4	2 (1 pair)	8 oz. GWM 4+- 2°C	6 months
8260 SIM (BTEX EDB EDC MTBE)	4	2 (1 pair)	5 Gram Encore	14 days

Table 2 WATER				
Method	Max. Number of Samples	MS-MSD samples	Container and Preservative	Holding Time (days)
PAH 8270 SIM	15	2 (1 pair)	1 Liter Amber Glass 4+- 2°C	7 days to extraction, 40 days to analysis
NWTPH-Dx	15	2 (1 pair)	1 Liter Amber Glass 4+- 2°C	14 days to extraction, 40 days to analysis
NWTPH-Gx	15	2 (1 pair)	3 VOA Vials 4+- 2°C	14 days
Total Pb 6020	15	2 (1 pair)	250 ml HDPE 4+- 2°C	6 months
Diss. Pb 6020	15	2 (1 pair)	250 ml HDPE 4+- 2°C	6 months
BTEX EDB EDC MTBE 8260 SIM	15	2 (1 pair)	3 40 ml VOA vials pH< 2 with Hcl 4+- 2°C	14 days
TSS 160.2	15	NA	500 ml HDPE 4+- 2°C	7 days

Table 3
SUMMARY OF METHOD QUALITY CONTROL CRITERIA

Method	LCS/BS Recovery (%)	Matrix Spike Recovery (%)	Surrogate Recovery (%)	Laboratory Precision (%)	Field Precision (%)
Metals (6020)	80-120	75-125	NA	20	200
8270 (PAH)	60-120	45-135	45-135	50	200
NWTPH-G	50-150	50-150	50-150	25	200
NWTPH-Dx	50-150	50-150	50-150	25	200
8260(BTEX, MTBE, EDB, EDC)	75-125	70-130	75-125	40	200
160.2 TSS	NA	NA	NA	15	200

Table 4. CONTAMINANTS OF CONCERN

Analyte	RBC's for Groundwater Occupational Exposure (ug/l)	RBC's for Soil Occupational Exposure (mg/kg)	Analytical Method
Benzene	2.2	34	8260B SIM
Toluene	2,900	68,000	8260B SIM
Ethylbenzene	5,400	74,000	8260B SIM
Xylenes	820	24,000	8260B SIM
MTBE	38	760	8260B SIM
EDB	0.0046	0.033	8260B SIM
EDC	0.75	15	8260B SIM
Diesel	350	70,000	NWTPH-Dx,
Gasoline	400	22,000	NWTPH-G,
Motor Oil	1,100	NA	NWTPH-Dx,
Lead	15	750	6020
Acenaphthene	1,500	41,000	8270C SIM
Anthracene	7,300	NA	8270C SIM
Benz[a]anthracene	0.56	2.7	8270C SIM
Benz[b]fluoranthene	0.56	2.7	8270C SIM
Benz[k]fluoranthene	5.6	27	8270C SIM
Benzo[a]pyrene	0.056	0.27	8270C SIM
Chrysene	56	270	8270C SIM
Dibenz[a,h]anthracene	0.56	0.27	8270C SIM
Fluoranthene	5,800	29,000	8270C SIM
Fluorene	970	35,000	8270C SIM
Indeno[1,2,3-cd]pyrene	0.56	2.7	8270C SIM
Naphthalene	25	770	8270C SIM
Pyrene	4,400	21,000	8270C SIM

Note: reporting limits shall be no more than ½ the risk-based concentrations above. The reporting limit for surface water shall be the same as for groundwater.

QUALITY ASSURANCE PROJECT PLAN

Part II: Quality Assurance Project Plan (QAPP)

1.0 Project Organization and Responsibilities

The USACE in-house environmental sampling team, consisting of the following team members, will accomplish all necessary tasks to complete this project:

- **Project Manager:** Rodney Taie, USACE is the Project Manager responsible for project schedule, budget, and coordination with the Lake Washington Technical College.
- **In-House Environmental Sampling Team:** Joseph Marsh (Team Lead and Site Manager), Chad Crownover and Glen Terui (Civil Engineer (PE) contractor). Joseph Marsh is the team lead and site manager responsible for: preparing the scope to acquire a direct push contractor; completion of the site-specific Field Sampling Plan; Accident Prevention Plan/Activity Hazard Analysis in conjunction with the industrial hygienist; acquiring supplies, and sampling preparation; conducting the marking of underground utilities; coordinating and conducting sampling activities; the supervision and safety of all contractor and Seattle District personnel; and the completion of a Sampling Report. Chad Crownover will assist with all aspects of field sampling. Glen Terui is responsible for: site layout, geologic logging of each soil boring, and assistance with all field sampling activities. Glen Terui and Joseph Marsh will prepare a field activity report at the conclusion of each sampling round. Glen Terui and Joseph Marsh maintain current HAZWOPER 8-hour refresher training and Chad Crownover recently completed the 40-hour HAZWOPER training.
- **Technical Lead/Project Chemist:** Sandy Lemlich is the project Chemist responsible for: scoping the project, QAPP preparation; determining the necessary analyses for the field samples; acquiring the analytical laboratory; evaluating the analytical results when they become available; documenting data quality objectives and assuring that they are met. She will also assist in completion of the final report.
- **Industrial Hygienist:** Kim Calhoun is the project Industrial Hygienist responsible for: reviewing the Accident Prevention Plan, and Activity Hazard Analysis for this project. Ms. Calhoun will assure that the plan meets all the applicable federal codes and regulations and that all necessary precautions associated with soil and ground water sampling activities have been addressed.

Name	Contact information		
	Phone	Fax	Email
Rodney Taie	(206) 764-3498	(206) 764-3706	rodney.r.taie@usace.army.mil
Sandy Lemlich	(206) 764-6930	(206) 764-3706	sandra.k.lemlich@usace.army.mil
Kim Calhoun	(206) 764-3415 (o) (253) 405-3199 (c)	(206) 764-3706	kimberly.Calhoun@usace.army.mil
Glen Terui	(206) 764-3320	(206) 764-3706	glen.j.terui@usace.army.mil
Joseph Marsh	(206) 764-6170	(206) 764-3706	joseph.r.marsh@usace.army.mil
Chad Crownover	(206) 764-6942	(206) 764-3706	chad.d.crownover@usace.army.mil

2.0 Data Assessment Organization and Responsibilities

The USACE, Seattle District project chemist will perform the review of 100% of the analytical summary data generated by laboratory. The data quality assessment report generated by the USACE Project Chemist to determine laboratory contract compliance will be included in the final report. USACE is responsible for generating a report for this sampling activity, indicating the nature and extent of contamination. The data review is discussed in section 8.0.

3.0 DQOs

3.1 Data Use Background

The primary purpose of the data to be collected is to confirm the contamination levels detected by Tetra Tech as well as to determine whether contamination, if present, is moving toward the slough. The purpose of this work is to determine whether this project can be closed without any additional remedial action. The following tables present the DQO's for each sampling location as well as the analytical procedures.

	Location	Sample/Intervals	Purpose	Analyses
Sample Point AA1DP01	Upgradient (southeast) of the former UST 1	Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1DP02	Northeast of the former UST 1	Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1DP03	Near previous fuel line confirmational sample points.	Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1DP04	Near previous fuel line confirmational sample points.	Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1DP05	Near previous fuel line confirmational sample points.	Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1DP06	Near previous fuel line confirmational sample points.	Soil will be comprised of one 4- foot interval if possible. Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm contamination if present, and at what concentrations.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA2DP01	West of previous UST 2 overexcavation confirmational sample points.	Soil will be comprised of one 4- foot interval if possible. Groundwater from between 4 and 15 feet bgs, the estimated	These samples will confirm vertical extent of contamination if present, at what concentrations, and if it is moving toward slough.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020

		depth to groundwater.		
Sample Point AA2DP02	West of previous UST 2 overexcavation confirmational sample points.	Soil will be comprised of one 4- foot interval if possible. Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm vertical extent of contamination if present, at what concentrations, and if it is moving toward slough.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA2DP03	West of previous UST 2 overexcavation confirmational sample points.	Soil will be comprised of one 4- foot interval if possible. Groundwater from between 4 and 15 feet bgs, the estimated depth to groundwater.	These samples will confirm vertical extent of contamination if present, at what concentrations, and if it is moving toward slough.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AASW01	Surface water in slough, downgradient.	Surface water sample	These samples will determine concentrations of contamination if present.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020
Sample Point AA1SW02	Surface water in slough, upgradient.	Surface water sample	These samples will determine concentrations of contamination if present.	The samples collected from this sample point will be analyzed for: BTEX/EDB/EDC/MTBE by 8260 SIM, NWTPH-Gx, NWTPH-Dx, PAHs by 8270 SIM, Total and Dissolved Lead by 6020

For this site, DEQ Risk Based Concentration for soil ingestion, dermal contact, and inhalation for occupational exposure shall be used for screening groundwater and soil. Surface water criteria will be used for screening slough water samples. These screening values are presented in Table 3-1. Reporting limits are required to be lower than ½ the screening value. If not possible, the laboratory is required to inform USACE immediately and to describe the methods taken to meet these limits.

3.2 Measurement Quality Objectives for Chemical Data Measurement

The goal is to have method reporting limits and precision/accuracy information such that the data can be evaluated definitively when compared to action levels. Sensitivity goals in terms of reporting limit for each analyte is determined by comparing the lowest cleanup criteria with the capabilities of the analytical method. The requirements of the analytical methods as well as the USACE Shell for Analytical Chemistry (Shell) will be followed.

The completeness goal for this project is 95%. From a practical standpoint, this means that no samples can be rejected based on holding times or out of control method quality control parameters (especially for low concentration samples) and still meet this goal. This means that the contract laboratory must meet holding times and quality control requirements. Samples with high levels of interference/contaminant concentrations such that surrogate and matrix spike recoveries are out side control parameters will be evaluated on a case by case basis for usability, with completeness not falling lower than 90%.

3.3 Field Quality Control Samples

One trip blank shall be placed in each cooler containing samples for analyses for gasoline and volatile organic compounds. These trip blanks will be submitted for analysis by method 8260 SIM and NWTPH-Gx. The blanks will be used to determine if there is any cross-contamination occurring during the sample shipment process.

Blind duplicate/split samples will be collected at a rate of 10% for each analysis to be performed. These samples will be used to monitoring the precision of the field collection and analytical methods.

To test the effectiveness of decontamination procedures, one equipment rinsate blank shall be collected during the field sampling investigation. Reagent grade water shall be allowed to flow through the decontaminated stainless steel macro-core sampler, and then captured in the appropriate sample containers for analysis for NWTPH-Dx, PAH's (8270 SIM), and total and dissolved lead (6020).

4.0 Sample Receipt, Handling, Custody and Holding Time Requirements

Samples will be hand delivered under chain of custody to the laboratory following protocols established in Section 8.0 of the Field Sampling Plan.

See the tables in the Field Sampling Plan for Sample Collection, Preservation, And Holding Time Criteria.

4.1 Verification/Documentation of Cooler Receipt Condition

Upon receipt at the laboratory, the cooler will be examined as to temperature (i.e., temperature blank), condition of cooler and samples, and paperwork (chain of custody, sample labels, custody seals). A cooler receipt form shall be completed by the laboratory sample receiver with a copy faxed (along with the custody forms) to the USACE project chemist, Sandy Lemlich, at (206) 764-3706 upon receipt of samples at the laboratory.

4.2 Corrective Action for Incoming Samples

If any problems are documented upon receipt of samples, the laboratory shall notify the USACE Project Chemist immediately.

- If the cooler temperature is greater than the required 4 ± 2 degrees Centigrade, the cooler temperature will be compared with the temperature of the soil/water at the time of sample collection, as well as the ambient temperature.
- If jars arrive at the laboratory broken, the samples will need to be recollected. Cooler packaging procedures will need to be reevaluated and extra measures taken to ensure that samples do not get broken in route to the laboratory.
- If there are discrepancies noticed between the custody form and the sample containers, the field note will be consulted as well as the field sampling team. Discrepancy resolution shall be documented.

4.3 Sample Preservation

The appropriate sample containers will be prepared in advance of actual sample collection for analytes of interest and include sample preservative where necessary. Any problems with sample preservation shall be reported to the USACE Project Chemist.

4.4 Temperature Blanks

Temperature blanks are used to measure the temperature of the cooler upon receipt of the cooler at the laboratory. One temperature blank will be packed in each shipping cooler in the same manner as the rest of the samples. Any problems with cooler temperature shall be reported to the USACE Project Chemist.

5.0 Analytical Procedures

The method, laboratory standard operating procedure for that method, and the shell requirements shall be followed. Any “should” will be treated as “shall”, and “may” will be regarded as “must”. Established methods shall be followed to allow for results to be compared to future collected data from the same site. The laboratory is required to use cleanup procedures in order to achieve the required reporting limits and eliminate interferences. Dilution is only to be used if a sample exceeds the calibration range.

The analytical methods, calibration procedures, and QC measurements and criteria are based on current analytical protocols in the following:

- EPA SW-846 Test Methods for Evaluation of Solid Waste, latest edition
- Laboratory-specific SOPs

Soil and water samples will be analyzed using the following methods:

- Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS by SW-846 Method 8270C SIM – This method is a gas chromatographic/mass spectroscopic selective ion mode (SIM) method for determining certain semi-volatile organic compounds in aqueous, soil, and waste matrices. The SIM is used rather than a full scan in order to obtain lower reporting limits but can only be used when a select known list of compounds are required.
- Metals by ICP/MS by SW-846 Method 6020 – this method is inductively coupled plasma mass spectroscopic method for determining trace metals in aqueous, soil, and waste matrices.
- Petroleum hydrocarbons by NWTPH-Dx – this method is a gas chromatographic method which utilizes a flame ionization detector for determining semi-volatile (“diesel”) petroleum products in soil and water. Petroleum products applicable for this include jet fuels, kerosene, diesel oils, hydraulic fluids, mineral oils, lubricating oils and fuel oils. The method involves extracting the samples with methylene chloride and injecting a portion of the extract into a gas chromatograph (GC) equipped with a flame ionization detector (FID). A clean-up procedure, which may be used to aid in the removal of non-petroleum based organic interferences, i.e. biogenic interferences, is specified in the method.
- Petroleum hydrocarbons by NWTPH-Gx – this method is a gas chromatographic method which determines volatile (“gasoline”) petroleum products in soil and water. Petroleum products applicable for this method include aviation and automotive gasolines, mineral spirits, stoddard solvent and naphtha. Soil samples are extracted with methanol (using EPA method 5035) and analyzed by gas chromatograph with a flame ionization detector (GC/FID).
- Volatile Organic Carbons (BTEX, EDB, EDC, MTBE) by GC/MS by SW-846 Method 8270C SIM. This method is a gas chromatographic/mass spectroscopic selective ion mode method for determining certain volatile organic compounds in aqueous, soil, and waste matrices. The SIM is used rather than a full scan in order to obtain lower reporting limits but can only be used when a select known list of compounds are required.
- Total Suspended Solids by Gravimetric Method 160.2.

Clean-up analyses shall be performed as specified in the analytical method and necessary to achieve required reporting limits.

5.1 Preventive Maintenance

The preventive maintenance prescribed by the instrument specifications/manual, the laboratory quality management plan, as well as paragraph I.4.4.2.1 of the Shell, will be followed.

5.2 Calibration Procedures and Frequency

The calibration procedures and frequency specified by each method and the Shell will be followed. In addition, procedures defined in SW846 and USACE SHELL will be referenced to ensure calibration procedures and frequency are followed.

Follow the requirements from the Shell for initial calibration in section I.9.2. (including subsections).

Continuing calibration verification requirements of Shell section I.9.5 (including subsections) shall be followed.

5.3 Laboratory QC Procedures

Laboratory overall method performance shall be monitored by the inclusion of various internal quality control checks that allow an evaluation of method control (batch QC), and the effect of the sample matrix on the data being generated (matrix-specific QC). Batch QC is based on the analysis of a laboratory control sample to generate accuracy (precision and bias) data and MB data to assess the potential for cross-contamination. Matrix-specific QC shall be based on the use of project-specific environmental sample for precision and bias determinations from the analysis of MSs, MS duplicates, matrix duplicates, and surrogate spikes, etc. The overall quality objectives are to implement procedures for laboratory analysis and reporting of data that are indicative of the degree of quality consistent with their intended use. ***Measurement quality objectives given as QC sample acceptance limits and ranges may be default values established within this guidance, or may be based upon project DQOs.*** Laboratory-generated control ranges are also used for an internal evaluation of method performance and control; however, requirements in this QAPP shall take precedence. ***Deviations from any of these target ranges will result in the implementation of appropriate corrective measures and an assessment of the impact on the usability of the data in the decision-making process.***

The laboratory QC Procedures discussed in Section I.10 (including subsections) shall be followed.

5.3.1 Analytical Sequence QC

Refer to method and Shell requirements.

5.3.2 Batch/Matrix-Specific/Performance-Based QC

Refer to method and Shell requirements.

5.4 Performance and System Audits

Shell section I.11.6, Onsite audits, shall be followed. The laboratory shall have current USACE or NELAP validation.

5.5 Nonconformance/Corrective Actions

Shell section I.11, Measurement quality objectives and Corrective Actions, shall be followed. The USACE Project Chemist shall be notified immediately of any non-conformance/corrective actions. Any nonconformance with the established QC procedures will be expeditiously identified, corrected, and controlled. Where procedures are not in compliance with the established protocol, corrective actions will be taken immediately. Subsequent work that depends on the nonconforming activity will not be performed until the identified nonconformance is corrected. In summary, corrective action involves the following steps:

- Discovery of a nonconformance
- Identification of the responsible party
- Determination of root causes
- Plan and schedule of corrective/preventive action
- Review of the corrective action taken
- Confirmation that the desired results were produced

6.0 Data Reduction/Calculation of Data Quality Indicators

This section provides QA/QC procedures that will be used during data collection activities. These procedures are established to ensure that chemical data collected during the project are representative of conditions in the field, and that analytical results are valid and are reported accurately. These procedures should be reviewed by the sampling personnel prior to each sampling event.

6.1 *Data Quality Objectives and Data Quality Indicators*

The Data Quality Assurance Objectives (DQOs) are presented in the Field Sampling Plan and in Section 3.0 of the QAPP. The Measurement Quality Objectives (MQOs) necessary to satisfy the DQOs are determined based on the end use of the data, analytical technique and method, and the validity of the data. The primary MQO is to produce data that are known quality, are reproducible, and are appropriate for their intended end use. The discussion of quality assurance is divided into two sub-sections: 1) the overall analytical objectives and rationale, and 2) the quantitative and qualitative Data Quality Indicators (DQIs) for measurement. The analytical objectives and rationale section provides the rationale for the analytical methodologies selected for the investigation. The quantitative and qualitative DQIs for measurement section provides the reporting limits, precision, accuracy, and completeness for the analytical methodologies that will be used during the investigation.

6.1.1 Analytical Objectives and Rationale

The overall MQO of the analytical plan is to obtain analytical results that satisfy the DQOs. The MQOs are listed in Table 6-1.

6.1.2 Data Quality Indicators

Analytical data obtained as a result of this investigation will be evaluated with respect to DQIs for precision accuracy, representativeness, comparability, and completeness (PARCC) parameters and sensitivity. DQIs for precision and accuracy are included in Table 6-1 for each analytical method. The DQIs are performance based laboratory limits for spike recovery and laboratory duplicate samples or spike analysis that have been developed following method-specified procedures. Where laboratory limits are unavailable, estimates or method-specified limits are included. These are the minimum performance levels, and data produced will be comparable within those specifications. In general, the DQIs are in compliance with those specified in the Corps Shell Guidance, with the exceptions of where noted in the tables.

In addition, method sensitivity is determined by comparing project-specific detection limits to regulatory thresholds and published risk-based concentrations for each analytical method. Laboratory reporting limits compared to the **Oregon Table of Risk-Based Concentrations, Appendix A, Occupational Exposure**.

The laboratory data reports will be of sufficient detail to provide all information necessary so that PARCC evaluation can be performed. Data will be assessed in terms of PARCC parameters, sensitivity, and other factors affecting data quality to determine if they meet DQIs and can be used for their intended purpose. Variances from DQIs shall be documented in QA corrective action notifications. The laboratory will also provide data packages that conform in level of detail to the EPA Contract Laboratory Program (CLP) so that, if required at a future date, full validation can be performed.

6.1 Precision

Precision is defined as the degree of agreement between or among independent, similar, or repeated measures. Precision is expressed in terms of analytical variability. For this project, analytical variability will be measured as the RPD or coefficient of variation between analytical laboratory duplicates and between the MS and MSD analyses. Requirements for precision for this project are specified in Table ???. Monitoring variability will be measured by analysis of blind field replicate samples.

$$\%RPD_i = \frac{|Q_i - D_i|}{Q_i} \times 100\%$$

$$(O_i + D_i)$$

where:

$$\begin{aligned} \%RPD_i &= \text{Relative percent difference for compound } i \\ O_i &= \text{Value of compound } i \text{ in original sample} \\ D_i &= \text{Value of compound } i \text{ in duplicate sample} \end{aligned}$$

6.2 Accuracy/Bias

Accuracy, or bias, is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systematic error. It therefore reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ excessively from the known concentration of the spike or standard.

Accuracy measures the bias in a measurement system and is difficult to measure for the entire data collection activity. Sources of error include the samples process, field contamination, preservation handling, sample matrix, sample preparation, and analysis techniques.

Accuracy will be calculated as percent recovery of analytes as follows:

$$\%R_i = (Y_i / X_i) \times 100\%$$

where:

$$\begin{aligned} \%R_i &= \text{percent recovery for compound } i \\ Y_i &= \text{measured analyte concentration in sample } i \text{ (measured minus original sample concentration)} \\ X_i &= \text{known analyte concentration in sample } i \end{aligned}$$

The resultant percent recoveries will be compared to acceptance criteria and deviations from specified limits will be reported. If the objective criteria are not met, the laboratory will supply a justification why the acceptability limits were exceeded and implement the appropriate corrective actions. Percent recoveries will be reviewed during data validation and deviations from the specified limits will be noted and the effect on reported data commented upon by the data reviewer. Table 6-1 contains percent recovery criteria for this project.

6.3 Sample Quantitation/Reporting Limits (Limit of Detection)

Sensitivity refers to the ability of an analytical method to detect compounds at the concentrations needed to meet the project objectives. The sensitivity of the analytical methods (i.e., method reporting limits) identified for this project is insufficient to allow comparison of the analytical data to all the MTCA state action levels. However, the laboratory will be directed to report compounds detected below the MRL and above the MDL and qualified as estimated (J). These estimated compound concentrations will be used, in addition to the fully quantitated concentrations, in comparison to screening criteria.

In some cases, it may not be feasible to achieve regulatory and risk-based levels without either modifying analytical methods or allowing J-flagging of data as estimated. In many cases, it may not be possible to achieve these levels with any currently available commercial analytical technology. Such technical limitations must be taken into account as well as the end use of the data.

All analyses for samples will be performed in general accordance with the methods specified in Table 6-1 will comply with the Shell document (Corps, 2001). A laboratory (Corps-certified) under contract to USACE will perform the analyses. The address and contact of the project laboratory will be added once the contract is finalized.

6.4 Completeness

Evaluation of the Project Completeness Summary (analytical, contract compliance, technical, and field sampling completeness) requires the calculation of acceptable sample results to all sample results. This doesn't account for estimated results that may still be useable for project decision making. Thus four calculations of completeness are will be evaluated.

$$\text{Contract Completeness} = \frac{\# \text{ contract compliant results}}{\# \text{ results reported}} \times 100$$

$$\text{Analytical Completeness} = \frac{\# \text{ unqualified results}}{\# \text{ results reported}} \times 100$$

$$\text{Technical Completeness} = \frac{\# \text{ useable results}^{\dagger}}{\# \text{ results reported}} \times 100$$

$$\text{Field Sampling Completeness} = \frac{\# \text{ samples collected}}{\# \text{ samples planned}} \times 100$$

[†] Estimated results considered as useable for project decision making

The minimum goals for completeness are as follows: 1) Contract = 100%, 2) Analytical = 90% or greater, 3) Technical = 95% or greater, and 4) Field = 100% or greater. The goal for holding times is 100%. Estimated results are treated as usable results for technical completeness.

A completeness summary will be provided in tabular and graphical format presenting the relevant analyses, the total number of samples analyzed for each method, the number of samples qualified for any reason, the number of samples associated with contract compliance failure, the determination of "analytical completeness" (determined relative to the number of samples qualified for any reason), and "contract compliance completeness" (determined relative to the number of samples qualified for contract compliance failure). Routinely, the value reported for "contract compliance completeness" should be at or near 100% while the value reported for "analytical completeness" may be less than that as a function of matrix effects. Each metal and organic compound is considered a separate analytical parameter rather than considering all of the analytes or compounds in a single analytical category for the purpose of calculating completeness. A single number for completeness in each category for each analysis will be presented to describe the overall data quality. A complete sample will be considered a sample for which all QC parameters are within acceptable limits. Contractual QC elements include: holding time, calibration, laboratory blanks, LCS, MS/MSD, surrogates, etc.). Analytical QC elements include the contractual QC elements and the defined elements that were reviewed and qualified, as defined in the QAPP. There will be overlap between the contractual and analytical QC elements.

Unusable data (i.e., data qualified as "R" rejected) will be identified during the QA review (Section 8.) Costs associated with samples which are rejected based on laboratory analytical errors or out of control quality control criteria will not be charged to the government. Samples with elevated concentrations which affect quality control measurements will have be evaluated on a case by case basis for impacts on data usability.

6.5 Comparability

Comparability is a qualitative measurement of the degree to which data from one study can be compared with data from other similar studies, reference values (such as background), reference materials, and screening values. This goal will be achieved through using standard techniques to collect samples, EPA- and WDOE-approved methods to analyze samples, and consistent units to report analytical results.

6.6 Representativeness

Representativeness refers to the degree to which sample data accurately and precisely describe the characteristics of a population of samples, parameter variations at a sampling point, or environmental condition. Appropriate sampling process design is critical in this regard. However, representativeness is influenced by laboratory actions as well. Qualitative measurements include:

- Noting sample characteristics in a laboratory case narrative and field log book
- Proper collection, preservation, and storage
- Assessing holding times
- Sample homogenization prior to and during aliquotting procedures

Quantitative assessment normally consists of a review of the precision (RPD) obtained from the field and laboratory duplicate samples.

7.0 Laboratory Operations Documentation

7.1 Sample Management Records

The laboratory shall follow their standard operating procedure for the in-processing and internal handling of samples.

7.2 Data Reduction Procedures

The laboratories will perform in-house analytical data reduction under the direction of the laboratory QA Manager. Laboratory data reduction procedures will be those specified in EPA approved methods and those described in the laboratory SOPs. The data reduction steps will be documented, signed, and dated by the analyst. Data reduction will be conducted as follows:

- Definitive data produced by the analyst will be processed and reviewed for compliance with QC criteria established in the QAPP. The analyst will also review the data for overall reasonableness and for transcription or calculation errors.
- After entry into the Laboratory Information Management System (LIMS), a computerized report will be generated and sent to the laboratory QA Manager.
- The laboratory QA Manager will decide whether any sample reanalysis is required. The laboratory Project Manager will contact the USACE Project Chemist to discuss non-compliant data sets upon discovering that any analysis fails to meet the required data quality criteria. If corrective actions have been taken and data still do not meet project QA requirements, the efforts will be documented in the case narrative.
- Upon acceptance of the preliminary reports by the laboratory QA data reviewer, final reports will be generated. Final data reports will be available within 28 calendar days of sample submittal.

Laboratory qualifiers as described and defined in the laboratory QA plans will include:

- Concentration below required reporting limit or above calibration limit
- Concentrations of the chemical also found in the laboratory blank
- Spiking analyte recoveries outside acceptable limits (inorganic analyses only)
- Laboratory duplicate precision outside acceptable limits (inorganic analyses only)
- Other sample-specific qualifiers necessary to describe QC conditions

The laboratories will maintain detailed procedures for laboratory record keeping to support the validity of all analytical work. Each data report package submitted will contain the laboratories' written certification that the requested analytical method was run and that all QA/QC checks were performed. The laboratory program administrators will provide QC reports of their external audits if appropriate, which will become part of the central project files.

7.3 Data Review

Internal laboratory review of the data generated for this contract shall be performed and documented in accordance with USACE SHELL paragraph I.13.2 (including subparagraphs).

7.4 Data Package Format and Contents

The following sections describe the requirements for analytical data packages.

7.4.1 Format for the Comprehensive Certificates of Analysis

- A. The "Cooler Receipt Form" shall be completed by the Contract Laboratory documenting sample conditions on arrival at the laboratory. Original copies of cooler receipt forms as well as original copies of chain of

custody forms shall be provided with certificates of analysis. Examples of both forms shall be provided in the QAPP.

- B. For each analytical method the Contract Laboratory shall report all analytes as a detected concentration or as less than the PQL. All samples with out of control spike recoveries being attributed to matrix interference will be designated as such. All soil samples will be reported on a dry weight basis with the percent moisture reported for each sample. Dilution factors, date of extraction, date of analysis, and practical quantitation limits shall be reported for each analyte and method.
- C. Reports of method blanks shall include all analytes for each analytical method. Analytical results for each sample shall be clearly associated with a particular method blank. Any detected concentration found in method blanks shall be reported. Reports of concentrations below the PQL are necessary to evaluate low level determinations of target compounds in samples.
- D. Surrogate spike recoveries shall be reported for all applicable methods. The report shall also specify the control limits for surrogate recoveries. Any out-of-control recoveries shall result in the sample being rerun once. If subsequent analyses result in out of control recoveries both results shall be reported and the data flagged.
- E. MS/MSD recoveries shall be reported for all analyses. All sample results shall be designated as corresponding to a particular set of MS/MSD analyses. MS/MSD analyses not meeting quality control criteria specified in the QAPP shall be rerun once. If subsequent analyses result in out of control recoveries both results shall be reported and the data flagged. Only samples from this project shall be used for MS/MSD analyses. (The Contract Laboratory shall not use samples from other projects for MS/MSD analyses.) The report shall also specify control limits for spike recoveries and RPD for each spiked analyte.
- F. Results for laboratory duplicates shall be reported with RPD limits for duplicate analyses.
- G. LCS results shall be reported with control limits for LCS analyses. Analytical results for each sample shall be clearly associated with a particular LCS sample.
- H. Results of initial and continuing calibration analyses for all analyses shall be included in the data package. Continuing calibration results shall be organized such that sample results shall be clearly correlated with the calibration check samples that bracket the sample results. Injection records for all sample analyses shall be included with the calibration data. Summaries of calibration data should be provided as a CLP Form VI and VII or equivalent for organic analyses and Form II modified for SW-846 analyses for inorganic analyses. (Note: Copied pages of handwritten laboratory notebooks will be unacceptable to fulfill the requirements of these specifications.)
- I. The Contract Laboratory shall prepare a summary of all samples with detected concentrations of target compounds indexed by method and by sample ID.
- J. The Contract Laboratory shall prepare a summary of all surrogate recoveries for organic analyses for each applicable method with the acceptable recovery range clearly indicated. This summary shall be performed for all samples for each analytical method involving surrogate spikes.
- K. The Contract Laboratory shall prepare a summary of all Matrix Spike/Matrix Spike Duplicate analyses for each applicable method indicating acceptable recovery ranges and QC acceptance criteria for RPD.
- L. The Contract Laboratory shall prepare a summary of all laboratory and field duplicates with QC acceptance criteria for RPD clearly indicated.
- M. The Contractor/Contract Laboratory shall prepare a table identifying all QA samples and the corresponding primary samples for use by the QA Lab in preparation of the Chemical Quality Assurance Report (CQAR). This summary shall be delivered to the QA laboratory as described in Section 5.10.

- N. The comprehensive certificate of analysis shall contain a narrative section identifying samples not meeting quality control criteria and any other out of control condition. The narrative shall describe the corrective action taken. If "matrix effects" are invoked as a cause for out of control recoveries a subsection of the narrative shall present a detailed justification for this assertion to include a summary of all relevant quality control data.
- O. Chromatographs for all fuels analyses (detects and non-detects) presented at an attenuation where features of the chromatography are clearly visible shall be submitted for all projects involving fuels analyses by gas chromatography. Chromatographs of standards used for identification of fuels must also be included in the data package.
- P. All data for analyses during the period covered by the comprehensive certificate of analysis shall be included as an appendix to the comprehensive report. This data shall be presented on numbered pages with an index or table of contents describing the contents of the appendix.

7.4.2 RAW DATA PACKAGES

Requirements for submittal: Raw data packages shall be submitted to USACE for 100% of all samples analyzed by the Contract Laboratory. Raw data packages shall be delivered to the Project Chemist within 45 days of the time of sample receipt at the laboratory.

7.4.2.1 Organic Analyses

The raw data package for organic analyses shall consist of a case narrative, chain-of-custody documentation, summary of results for environmental samples, summary of QA/QC results, and the raw data. Detailed descriptions of the requirements for each component of an organic raw data package are provided in the following sections.

7.4.2.1.1 Case Narrative. The case narrative shall be written on laboratory letterhead and the laboratory manager or his/her designee shall authorize the release of data. Items to be included in the case narrative are the field sample ID with the corresponding laboratory ID, parameters analyzed for in each sample and the methodology used (EPA method numbers or other citation), a statement on the status of samples analyzed with respect to holding times (met or exceeded), detailed description of all problems encountered, discussion of possible reasons for out of control QA/QC criteria, and observations regarding any occurrences which may effect sample integrity or data quality.

7.4.2.1.2 Chain-of-Custody Documentation. Legible copies of Chain-of-Custody forms for each sample shall be maintained in the data package. Cooler log-in sheets shall be associated with the corresponding Chain-of-Custody form. Any internal laboratory-tracking document shall be included.

7.4.2.1.3 Summary of Environmental Results. For each environmental sample analysis this summary should include field ID and corresponding laboratory ID, sample matrix, date of sample extraction (if applicable), date and time of analysis, identification of the instrument used for analysis, GC column and detector specifications (if applicable), weight or volume of sample used for analysis/extraction, dilution or concentration factor used for the sample extract, percentage of moisture in the sample, method detection limit or sample quantitation limit, definitions of any data qualifiers used, and analytical results.

7.4.2.1.4 Summary of QA/QC Results. The following QA/QC results shall be presented in summary form. Details specified in Section 5.5.2.1 (Organic Analysis) shall also be included for the summary of QA/QC results. Acceptance limits for all categories of QC criteria shall be provided with the data. All summaries will be presented on standard forms. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages.

- A. Initial Calibration. The concentrations of the standards used for analysis and the date and time of analysis. The response factor, percent relative standard deviation (%RSD), and retention time for each compound (as applicable, GC and GC/MS analyses) shall be included in initial calibration summaries. A statement should also be made regarding the samples or dates for which a single initial calibration applies.
- B. Daily Calibration and Mid-level Standard: The concentration of the calibration standard used for daily calibration and/or the mid-level calibration check shall be reported. The response factor, percent difference, and retention time for each compound shall be reported (GC and GC/MS). Daily calibration information shall be linked to sample analyses by summary or by daily injection or analysis logs. Tuning information for GC/MS shall also be included with the calibration.

- C. Method Blank Analyses: The concentrations of any compounds found in method blanks shall be reported. The environmental samples and QA/QC analyses associated with each method blank shall be stated.
- D. Surrogate Standard Recovery: The name and concentration of each surrogate compound added shall be detailed. The percent recovery of each surrogate compound in the samples, method blanks, matrix spike / matrix spike duplicates and other QA/QC analyses shall be summarized with sample ID's such that the information can be linked to sample and QA/QC analyses.
- E. Internal Standard Recovery: The name and concentration of each internal compound added shall be detailed (retention time and area counts). The percent recovery of each internal compound in the samples, method blanks, matrix spike/matrix spike duplicates and other QA/QC analyses shall be summarized with sample ID's such that the information can be linked to sample and QA/QC analyses.
- F. Precision and Accuracy: For matrix spike / matrix spike duplicate analyses the sample results, spiked sample results, percent recovery, and RPD with the associated control limits shall be detailed. For laboratory duplicate analyses the RPD between duplicate analyses shall be reported as applicable. For laboratory QC Check and/or LCS analyses the percent recovery and acceptable control limits for each analyte shall be reported. All batch QC information shall be linked to the corresponding sample groups.
- G. Retention Time Windows (GC, GC/MS): The retention time window for each compound for both primary and confirmation analyses shall be reported. Retention time windows are to be updated daily per EPA SW-846.
- H. Compound Identification (GC, GC/MS): the retention times and the concentrations of each compound detected in environmental and QA/QC samples shall be reported for both primary and confirmation analyses.
- I. Method Detection Limits: Results of the most current detection limit study shall be provided in the raw data package.
- J. Injection Record: Injection logs for all instruments used for analysis of project samples shall be provided indicating the date and time of analysis of project samples and the associated laboratory QA/QC samples (initial calibration, continuing calibration check, method blank, matrix spikes, etc.).

7.4.2.1.5 Raw Data. Legible copies of all raw data shall be organized systematically on numbered pages. The raw data for compound identification and quantitation must be sufficient to support all results presented in other sections of the raw data package. All raw data will be presented on standard forms and accompanied by the instrument output. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages.

- A. GC Analyses: This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID, primary and confirmation analyses), instrument calibrations, QA/QC analyses, sample extraction and cleanup logs, instrument analysis logs (injection record) for each instrument used, and GC/MS confirmations if applicable. The raw data for each analysis shall include chromatograms (preferably with target compound, internal standard and surrogate compounds labeled by name) with a quantitation report and/or areas print out.
- B. GC/MS Analyses: This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID, spectrometer tuning and mass calibration reports, initial and continuing instrument calibrations, QC analyses, sample extraction logs, and instrument analysis logs (injection record) for each instrument used. The raw data for each analysis shall include chromatograms (preferably with target compound, internal standard, and surrogate compounds labeled by name) and enhanced spectra of target compounds and/or tentatively identified compounds with the associated best matched spectra. Quantitation reports for all analyses shall be included in the data package.

7.4.2.2 Inorganic Analyses. The raw data package for inorganic analyses shall consist of a case narrative, chain-of-custody documentation, summary of results for environmental samples, summary of QA/QC results, and the raw data. Detailed descriptions of the requirements for each component of an inorganic analyses raw data package are provided in the following sections.

7.4.2.2.1 Case Narrative. The case narrative shall be written on laboratory letterhead and the laboratory manager or his/her designee shall authorize the release of data. Items to be included in the case narrative are the field sample ID with the corresponding laboratory ID, parameters analyzed for in each sample and the methodology used (EPA method numbers or other citation), a statement on the status of samples analyzed with respect to holding times (met or exceeded), detailed description of all problems encountered, discussion of possible reasons for out of control QA/QC criteria, and observations

regarding any occurrences which may effect sample integrity or data quality. The case narrative shall be sufficiently detailed such that the process of analysis can be reconstructed (i.e. if samples are diluted to bring results into the linear dynamic range, or re-extracted for QC failures the course of analysis shall be detailed in the case narrative.)

7.4.2.2.2 Chain-of-Custody Documentation. Legible copies of Chain-of-Custody forms for each sample shall be maintained in the data package. The date of receipt must be described on the Cooler log-in sheets shall be associated with the corresponding Chain-of-Custody form. Any internal laboratory-tracking document shall be included.

7.4.2.2.3 Summary of Environmental Results. For each environmental sample analysis the raw data package should include field identification and corresponding laboratory identification number, sample matrix, date of sample digestion (as applicable), date and time of analysis, identification of the instrument used for analysis, instrument specifications, weight or volume of sample used for analysis/digestion, dilution or concentration factor used for the sample extract, percentage of moisture in the sample, method detection limit or sample quantitation limit, definitions of any data qualifiers used, and analytical results.

7.4.2.2.4 Summary of QA/QC Results. The following QA/QC results shall be presented in summary form. Details specified in Section 5.10 (Inorganic Analysis) shall also be included for the summary of QA/QC results. All summaries will be presented on standard forms. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages.

- A. Instrument Calibration: The order of reporting of calibrations for each analyte must follow the temporal order in which standards were analyzed.
- B. Initial Calibration: The source of the calibration standards, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
- C. Continuing Calibration Verification: The source of the calibration standards, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
- D. Method Blank Analyses: The concentrations of any analytes found in initial calibration blanks, continuing calibration blank, and in the preparation blank shall be reported. The date and time of analysis shall also be reported.
- E. Interference Check Sample: The source of the interference check sample, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
- F. Precision and Accuracy - Matrix Spikes and Duplicates: For matrix spike analyses the sample results, spiked sample results, percent recovery, the spiking solution used, and the control range for each element shall be detailed. For post digestion spikes the concentration of the spiked sample, the sample result, the spiking solution added, percent recovery and control limits shall be detailed. For laboratory duplicates the original concentration, duplicate concentration, relative percent difference, and control limits shall be detailed. Date and time for all analyses shall be recorded.
- G. Precision and Accuracy - Laboratory Control Samples: The source of the laboratory control sample, true value concentrations, found concentrations, the percent recovery for each element analyzed, and the date and time of analysis shall be reported.
- H. Method of Standard Additions (MSA): This summary must be included when MSA analyses are required. The absorbance values and the corresponding concentration values, the final analyte concentrations, and correlation coefficients shall be reported for all analyses. Date and time of analysis shall be recorded for all analyses.
- I. ICP Serial Dilution: The initial and serial dilution results with percent difference shall be reported.
- J. ICP Linear Ranges: For each instrument and wavelength used the date on which the linear range was established, the integration time, and the upper limit concentration shall be reported.
- K. ICP Inter-element Correction Factors: For each instrument and wavelength used the date on which correction factors were determined shall be detailed. Specific correction factors for Al, Ca, Fe, Mg, and any other element and the analytes to which they are applied shall be detailed.
- L. Instrument Detection Limits: Results of the most current detection limit study shall be provided in the raw data package.
- M. Analysis Record: Analysis logs for all instruments used for analysis of project samples shall be provided indicating the date and time of analysis of project samples and the associated laboratory QA/QC samples (initial calibration, continuing calibration check, method blank, matrix spikes, etc.).

7.4.2.2.5 Raw Data. Legible copies of all raw data shall be organized systematically on numbered pages. The raw data for compound identification and quantitation must be sufficient to support all results presented in other sections of the raw data package. This section of the data package shall include legible copies of the raw data for environmental samples (arranged in increasing order of field ID), instrument calibrations, QA/QC analyses, sample extraction and cleanup logs, instrument analysis logs for each instrument used. Instrument analysis logs are particularly important since they provide the basic link between all sample analyses and QC information. (calibration standards, matrix spike, etc.) Instrument analysis logs for all instruments used for sample analyses for this project shall be provided for all days on which analysis was performed. The raw data for each analysis shall include measurement print outs and quantitation reports for each instrument used. Records of absorbance, titrimetric, or other measurements for wet chemical analysis shall be recorded. All raw data will be presented on standard forms and accompanied by the instrument output. Use of CLP standard forms is not necessary, however submission of standard instrument output alone is unacceptable to satisfy the requirements for raw data packages.

7.4 Data Management Procedures

7.4.1 Laboratory Turnaround Time

. Final data reports shall be available within 28 calendar days of sample receipt at laboratory.

7.4.2 Data Archival/Retention Requirements

Data packages received by USACE from the laboratory will be reviewed and then archived indefinitely. The laboratory shall maintain their records associated with the analyses of these project samples indefinitely. Should the laboratory close for business, all records associated with these samples shall be turned over to USACE.

8.0 Data Assessment Procedures

8.1 Data Verification/Review

Definitive data require data verification (data quality assessment) for 100% of the summary results for each analysis reported in each of the samples, calibrations, and QC analyses. Data verification will be performed by the USACE Project Chemist. The data quality assessment report provides a list of all samples being verified, a narrative summarizing each review topic (e.g., calibration, hold times, etc.), flagged form 1s, worksheets, and any data resubmitted by the laboratories at the request of the reviewer. The data verification process for this project will follow the procedures in EPA's Functional Guidelines (EPA 1999a and b), as applicable to the USACE Shell, this QAPP, and method SOPs. The data quality assessment will include verification of the following:

- Compliance with the QAPP
- Proper sample preservation and handling procedures
- Holding times
- QC results
- Instrument calibration verification
- Laboratory blank analysis
- Detection limits
- Review of the summary data for 100% of the results reported in each of the samples, QC samples, and blanks for analyte identification and quantitation conformance
- Laboratory duplicates
- MS/MSD percent recoveries and relative percent differences
- Surrogate percent recoveries
- Data completeness and format
- Data qualifiers assigned by the laboratories

Qualifiers will be added to data during validation or review as necessary. Qualifiers applied to the data as a result of the independent review will be limited to:

- U The analyte was analyzed for but was not detected above the sample-specific reporting limit.
- J The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the sample.
- UJ The analyte was not detected above the sample reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation.
- R The analyte results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

8.2 DQO Reconciliation

If any nonconformances are found in the field procedures, sample collection procedures, field documentation procedures, laboratory analytical and documentation procedures, or data evaluation and quality review procedures, the impact of those nonconformances on the overall project QA objectives will be assessed. Appropriate actions, including resampling and reanalysis, may be recommended to the Project Manager so that the project objectives can be accomplished.

8.3 Project Completeness Assessment

After completing the data review and independent data validation, project completeness will be assessed according to Section 6.0 above.

9.0 Schedule

Sampling is tentatively scheduled to take place the week of August 16, 2004.

Section 10. TABLES

Table 3-1. CONTAMINANTS OF CONCERN

Analyte	RBC's for Groundwater Occupational Exposure (ug/l)	RBC's for Soil Occupational Exposure (mg/kg)	Analytical Method
Benzene	2.2	34	8260B SIM
Toluene	2,900	68,000	8260B SIM
Ethylbenzene	5,400	74,000	8260B SIM
Xylenes	820	24,000	8260B SIM
MTBE	38	760	8260B SIM
EDB	0.0046	0.033	8260B SIM
EDC	0.75	15	8260B SIM
Diesel	350	70,000	NWTPH-Dx,
Gasoline	400	22,000	NWTPH-G,
Motor Oil	1,100	NA	NWTPH-Dx,
Lead	15	750	6020
Acenaph-thene	1,500	41,000	8270C SIM
Anthracene	7,300	NA	8270C SIM
Benz[a]an-thracene	0.56	2.7	8270C SIM
Benz[b]-fluoranthene	0.56	2.7	8270C SIM
Benz[k]-fluoranthene	5.6	27	8270C SIM
Benzo[a]-pyrene	0.056	0.27	8270C SIM
Chrysene	56	270	8270C SIM
Dibenz[a,h]-anthracene	0.56	0.27	8270C SIM
Fluoranthene	5,800	29,000	8270C SIM
Fluorene	970	35,000	8270C SIM
Indeno[1,2,3-cd]-pyrene	0.56	2.7	8270C SIM
Naphthalene	25	770	8270C SIM
Pyrene	4,400	21,000	8270C SIM

Note: reporting limits shall be no more than ½ the risk-based concentrations above. The reporting limit for surface water shall be the same as for groundwater.

Table 6-1
SUMMARY OF METHOD QUALITY CONTROL CRITERIA

Method	LCS/BS Recovery (%)	Matrix Spike Recovery (%)	Surrogate Recovery (%)	Laboratory Precision (%)	Field Precision (%)
Metals (6020)	80-120	75-125	NA	20	200
8270 (PAH)	60-120	45-135	45-135	50	200
NWTPH-G	50-150	50-150	50-150	25	200
NWTPH-Dx	50-150	50-150	50-150	25	200
8260(BTEX, MTBE, EDB, EDC)	75-125	70-130	75-125	40	200

APPENDIX B.

EM 200-1-3 Appendix I. Shell for Analytical Chemistry Requirements

<http://www.usace.army.mil/inet/usace-docs/eng-manuals/em200-1-3/a-i.pdf>

CLAUSES INCORPORATED BY REFERENCE

52.212-4	Contract Terms and Conditions--Commercial Items	OCT 2003
252.204-7004 Alt A	Required Central Contractor Registration Alternate A	NOV 2003

CLAUSES INCORPORATED BY FULL TEXT

Successor Contracting Officers (52.201-4001)

The Contracting Officer who signed this contract is the primary Contracting Officer for the contract. Nevertheless, any Contracting Officer assigned to the Seattle District and acting within his/her authority may take formal action on this contract when a contract action needs to be taken and the primary Contracting Officer is unavailable.

52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (JUN 2004)

(a) The Contractor shall comply with the following Federal **Acquisition Regulation** (FAR) clause, which is incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items: 52.233-3, Protest after Award (AUG 1996) (31 U.S.C. 3553).

(b) The Contractor shall comply with the FAR clauses in this paragraph (b) that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items: (Contracting Officer check as appropriate.)

___ (1) 52.203-6, Restrictions on Subcontractor Sales to the Government (JUL 1995), with Alternate I (OCT 1995) (41 U.S.C. 253g and 10 U.S.C. 2402).

___ (2) 52.219-3, Notice of HUBZone Small Business Set-Aside (Jan 1999) (U.S.C. 657a).

___ (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999) (if the offeror elects to waive the preference, it shall so indicate in its offer) (U.S.C. 657a).

___ (4) (i) 52.219-5, Very Small Business Set-Aside (JUNE 2003) (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994).

___ (ii) Alternate I (MAR 1999) to 52.219-5.

___ (iii) Alternate II to (JUNE 2003) 52.219-5.

___ (5)(i) 52.219-6, Notice of Total Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).

___ (ii) Alternate I (OCT 1995) of 52.219-6.

___ (iii) Alternate II (MAR 2004) of 52.219-6.

___ (6)(i) 52.219-7, Notice of Partial Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).

___ (ii) Alternate I (OCT 1995) of 52.219-7.

___ (iii) Alternate II (MAR 2004) of 52.219-7.

___ (7) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637 (d)(2) and (3)).

___ (8)(i) 52.219-9, Small Business Subcontracting Plan (JAN 2002) (15 U.S.C. 637(d)(4)).

___ (ii) Alternate I (OCT 2001) of 52.219-9

___ (iii) Alternate II (OCT 2001) of 52.219-9.

___ (9) 52.219-14, Limitations on Subcontracting (DEC 1996) (15 U.S.C. 637(a)(14)).

___ (10)(i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (JUNE 2003) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer).

___ (ii) Alternate I (JUNE 2003) of 52.219-23.

___ (11) 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

___ (12) 52.219-26, Small Disadvantaged Business Participation Program--Incentive Subcontracting (OCT 2000) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).

___ (13) 52.219-27, Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside (May 2004).

X (14) 52.222-3, Convict Labor (JUNE 2003) (E.O. 11755).

___ (15) 52.222-19, Child Labor--Cooperation with Authorities and Remedies (Jun 2004) (E.O. 13126).

___ (16) 52.222-21, Prohibition of Segregated Facilities (FEB 1999).

☒ **(17) 52.222-26, Equal Opportunity (APR 2002) (E.O. 11246).**

☒ **(18) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).**

☒ **(19) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).**

☐ (20) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).

☐ (21)(i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (AUG 2000) (42 U.S.C. 6962(c)(3)(A)(ii)).

☐ (ii) Alternate I (AUG 2000) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).

☐ (22) 52.225-1, Buy American Act--Supplies (JUNE 2003) (41 U.S.C. 10a-10d).

☐ (23)(i) 52.225-3, Buy American Act--Free Trade Agreements--Israeli Trade Act (JAN 2004) (41 U.S.C. 10a-10d, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note, Pub. L. 108-77, 108-78).

☐ (ii) Alternate I (JAN 2004) of 52.225-3.

☐ (iii) Alternate II (JAN 2004) of 52.225-3.

☐ (24) 52.225-5, Trade Agreements (Jun 2004) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).

☐ (25) 52.225-13, Restrictions on Certain Foreign Purchases (OCT 2003) (E.o.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of Treasury).

☐ (26) 52.225-15, Sanctioned European Union Country End Products (FEB 2000) (E.O. 12849).

☐ (27) 52.225-16, Sanctioned European Union Country Services (FEB 2000) (E.O. 12849).

☐ (28) 52.232-29, Terms for Financing of Purchases of Commercial Items (FEB 2002) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

☐ (29) 52.232-30, Installment Payments for Commercial Items (OCT 1995) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).

☒ **(30) 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration (OCT 2003) (31 U.S.C. 3332).**

☐ (31) 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration (MAY 1999) (31 U.S.C. 3332).

☐ (32) 52.232-36, Payment by Third Party (MAY 1999) (31 U.S.C. 3332).

☐ (33) 52.239-1, Privacy or Security Safeguards (AUG 1996) (5 U.S.C. 552a).

☐ (34)(i) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631).

☐ (ii) Alternate I (APR 1984) of 52.247-64.

(c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items: [Contracting Officer check as appropriate.]

 X (1) 52.222-41, Service Contract Act of 1965, as Amended (MAY 1989) (41 U.S.C. 351, et seq.).

_____ (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

_____ (3) 52.222-43, Fair Labor Standards Act and Service Contract Act--Price Adjustment (Multiple Year and Option Contracts) (MAY 1989) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

_____ (4) 52.222-44, Fair Labor Standards Act and Service Contract Act--Price Adjustment (February 2002) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).

_____ (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreements (CBA) (May 1989) (41 U.S.C. 351, et seq.).

(d) Comptroller General Examination of Record. The Contractor shall comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records--Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) (1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in paragraphs (i) through (vi) of this paragraph in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause--

(i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (April 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (December 2001) (38 U.S.C. 4212).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793).

(v) 52.222-41, Service Contract Act of 1965, as Amended (May 1989), flow down required for all subcontracts subject to the Service Contract Act of 1965 (41 U.S.C. 351, et seq.).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (April 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.

(2) While not required, the contractor May include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>
<http://www.farsite.hill.af.mil>
<http://www.dtic.mil/dfars>

(End of clause)